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ABSTRACT

The maritime industry provides an efficient method of transporting large volumes of basic commodities and finished products, with more than one-third of all international seaborne trade consisting of dry bulk cargo. Historically, the period that preceded the global financial crisis was characterized by accelerated growth, which culminated with the historic high point in the dry bulk freight market recorded during the second quarter of 2008. However, since mid-2008, the dry bulk sector presents high volatility, reflecting both lower demand for maritime transport and increase of the expected capacity. Within this framework, commercial banks, being the main source of financing for the shipping market, which is characterised by high capital and operating costs, have significantly reduced the volume of loans granted in the industry. The latter is of particular importance considering the recent regulatory framework for banks applied by the Basel III that limits the exposure of banks in sectors, like dry bulk shipping, that present high risk rate.

Keywords: Finance, Shipping Market, Risks, Basel Accord(s)

JEL Classification: E32, G15, G32, R40

ANALYSIS OF FINANCIAL CRISIS RESULTS ON DRY BULK MARKET & FINANCING

1. INTRODUCTION

Seaborne trade contributes in the transport of huge volumes of dry bulk freights, consisting of iron ore, coal and other raw materials, as well as raw materials for nutrition in bulk (cereal, fruits etc.). Historically, the time period that preceded the global financial crisis was characterized by an accelerated growth that managed a boom, which led to the most impressive economic cycle in the recent maritime history. Its peak was the historic high level of freight rates in the dry bulk market, which took place during the second quarter of 2008 (400% over the 10-year annual average). The main factors that played a role in this unprecedented increase – especially in the dry bulk freight market – were the accelerated development rates of the emerging economies (China, India, Brazil, Russia, and other countries of SE Asia), which when combined with the relative lack of available capacity led the freight rates (especially in the dry bulk market) in unprecedented heights. The rapid increase of investments and of production in the emerging economies led to the rapid increase of the bulk of worldwide trade and to the sudden increase of the demand for seaborne trade from both sides of the production process (countries that export basic raw materials- emerging economies).

However, from the mid-2008, the oceangoing shipping sector or, to be more specific, the dry bulk transport sector, showed signs of recession and significant volatility, reflecting the increase of demand for seaborne transport and the unsurprising increase of the offered capacity. Within this framework, commercial banks, being the main financial supply body that provides the resources necessary in a market characterized by its high capital and operational cost and also by high risk, due to the significant volatility, cut the number of investment loans for the sector back in a great extend. Also, in the latter contributed the application of the Basel Accord III, which limits the exposure of banks in certain sectors (the shipping and airline industry are such sectors), the loan portfolios of which, after the outbreak of the global financial crisis, appear to be mostly problematic.

2. SHIPPING MARKET CHARACTERISTICS: LITERATURE REVIEW

Regardless of the type of goods transported, the shipping market is comprised of four sub-markets (Stopford 1997), namely the shipbuilding market, the freight market (commercial exploitation of ships), the sale and purchase market (S&P, second-hand ships) and the demolition market, where, depending on the strategic planning of the maritime company and the shipping market conditions prevailing from time to time, a ship (main asset) reaches the end of its life-cycle. These sub-markets are directly interrelated and any developments in one of them may have an impact on one or more of the others, e.g. an increase in freight rates is bound to affect both the S&P market and the shipbuilding market (Kavussanos and Alizadeh 2002), given that supply actors have positive expectations of a further increase in demand and, by extension, of improved financial results in the industry. In implementing their investment plans (whether relating to shipbuilding or the purchase of second-hand ships), supply actors seek borrowing primarily from the banks, which in turn gain knowledge of the prevailing market conditions and assess any optimistic expectations extremely carefully, given the size of borrowing in the shipping sector, which is a capital-intensive market.

At the same time, given that the demand for available capacity emerges from and is almost exclusively perceived as a derivative demand in the international commerce, shipping market analysis is essentially connected to the analysis of international commercial and industrial operations, which are served by the merchant shipping and the developments of which have a direct and decisive impact on the shipping industry and, by extension, on the banks' positive response in granting the necessary loan capital.

In assessing the special features of the shipping market, any developments in either the internal (four sub-markets) or the external environment (international economic developments, international commerce) of the shipping market contribute to the creation of the shipping cycles (Metaxas 1971; Stopford 2009; Bijwaard and Knapp 2009), which are quite different in terms of both duration and periodicity. In particular, external factors relating to the structure of global economy may be positively or negatively limited to the demand for maritime transports, which is in turn reflected on positive or negative freight rate variations. These factors are classified in two basic categories (Zuellig 1942; Faust 1976):

- i) Those caused by social forces, and
- ii) Those caused by natural forces.

A study of international economic relations essentially involves political assessments, given that production factors present international mobility and shipping production is becoming globalised (Laos 2003). The demand for transportation services is affected by unforeseen developments in the international political environment. The French-German war in 1837, the economic crash in 1929, the Korean war in 1950, the Suez crisis in 1956, the Gulf War, the war in Iraq, the insurrection in the Arab world, particularly in Libya in 2010 - 2011 etc., have all had an impact on the supply and demand for maritime transports and, inevitably, on freight rates. At the same time, economic changes, particularly economic shocks, lead to a sharp increase in the demand for capacity on one part and to an excessive stand-still on the other. Consequently, this leads to extreme freight rate variations (Lorange P., Fjeldstat O. 2010), which clearly have to be taken seriously into account by shipping operators as they have a direct impact on ship values.

Taking into consideration the above, the main factor for the emergence and the development of the shipping cycles, is the relationship between supply and demand for capacity, which in its turn is a derivative demand of the global supply and demand for goods. Moreover, there exists no way to foresee the form and duration of every shipping cycle, which in combination with the significant variability of freight rates, presents risks for the bodies involved in the shipping market, in the full spectrum of their operational decisions. Said risks are distinguished into the financial risks of the market (market risk) based on the developments of the global financial activity, into credit risk and into operational risk, which are related to the ship's yield and to the everyday operation of the shipping company.

The major risks (Sambracos E. & Maniati M. 2013) relating to the particularities of the shipping market, which reflect all findings of the shipping market analysis, may be summarized as follows:

A. Market Risks:

1. Freight variability in short time periods (within a week)
2. Shifting towards purchases of ships of different capacity
3. Total income variability
4. Fuel price variability
5. Running costs variability
6. Geographic variations of freight in respect of ships of the same capacity

7. Locality of the supply/demand balance
8. Newly-built ship price variability
9. Second-hand / newly-built ship price variability in short periods of time
10. Asset (ships) price variability
11. Scrap price variability (determines the withdrawal of any excessive capacity, which affects the supply balance)
12. Variability due to technological developments / adjustments affecting operating or capital costs
13. Variability due to changes in the institutional framework, affecting the factors that determine operating costs
14. Financial risks and selection of loan currency
15. Loan interest rate variability
16. Exchange rate variability (particularly where loan payments and collections take place in different currencies)
17. Annual maintenance cost variability, in the context of the operational management policy applied by each ship owner
18. Market variability due to weather conditions
19. Market variability due to political developments
20. Market variability due to natural disasters

B. Credit Risks.

1. Counter party's solvency (default risk). This risk relates to all forms of default (technical, financial, failure to make interest or capital payments for a long period of time, etc).
2. Exposure Risk. This refers to the borrower's overall exposure to risk and his shipping portfolio diversification.
3. Recovery Risk. This refers to the level of security of the financial institution in case of default (or insolvency) of the borrower. This risk is particularly difficult to determine given that the prices of assets normally serving as security are constantly changing and depend on one or more market risks. This risk includes also the legal risks involved in the transaction procedure.
4. Credit Spread Risk. It relates to risks arising from the increase in credit spreads, especially in cases where a secondary market has developed and prices are constantly determined in terms of market values (mark to market).
5. Maintaining liquidity margins and applying cyclical /counter-cyclical policies (the tendency to follow the cycle or apply a mixed investment and disinvestment strategy)
6. The ship owner's policy as regarding his participation in asset management practices or his orientation towards chartering and the operating yield of assets.
7. The ship owners' and ship managers' policy towards preserving general and instant liquidity and cash flows.
8. Ship owners' policy in terms of long-term borrowing potentials
9. Ship owners' policy in terms of financial leverage
10. Ship's yield and employment during one year.
11. Ship managers' policy as to the type of chartering applied (time charter, voyage charter etc.)

Under these circumstances of high volatility and high risks, the main reason for the interrelated and interdependent relationship among commerce, industry, activity, purchases of dematerialized securities, financial markets and commodities, is the effort of the managers of capitals to profit and to extend said profit from their participation in them. On the other hand, the involvement of financing bodies and, most importantly, of

banks in high risk markets characterized by multidimensional parameters that have to be taken into consideration, proved that it may not lead to the repayment of the respective obligations, especially when the loan has already been received just before the outbreak of a period of global financial crisis, like the one that is still running from 2008 until today.

3. THE DRY BULK MARKET BEFORE AND AFTER THE FINANCIAL CRISIS

In the dry bulk market, the rapid increase of investments and of production in the emerging economies led to the accelerated growth of the volume of global commerce, and to the sudden increase of the demand for seaborne transport from both sides of the production process (countries that export basic raw materials-emerging economies). From a developmental point of view, the average annual growth of the international dry bulk freight commerce during the 1989 – 2009 period was 3,6%, when the respective average annual growth during the 2003-2008 period (before the influence of the global financial crisis in shipping) was 5,09%.

The outbreak of the financial crisis, that caused the development of seaborne trade to present significantly negative variation rates, led the shipowners to cancel their orders (especially in the market sub-category Handysize), this way reducing the size of excessive capacity when compared to the corresponding size that was expected (according to the orders' book). Additional balancing mechanisms in the liquid bulk market that contributed to the decline of the available capacity (which, during the time of crisis was in particularly high levels), are the existence of delays in the ships' unloading process due to the increased traffic in the ports of China, as well as the increase of the rate of destruction of the dry bulk ships, especially those that surpass 25 years of age and those that have smaller carrying capacity. In order to explain this further, the development of capacity offered per market sub-category in seaborne dry bulk freight transport, is presented on the following Figure.

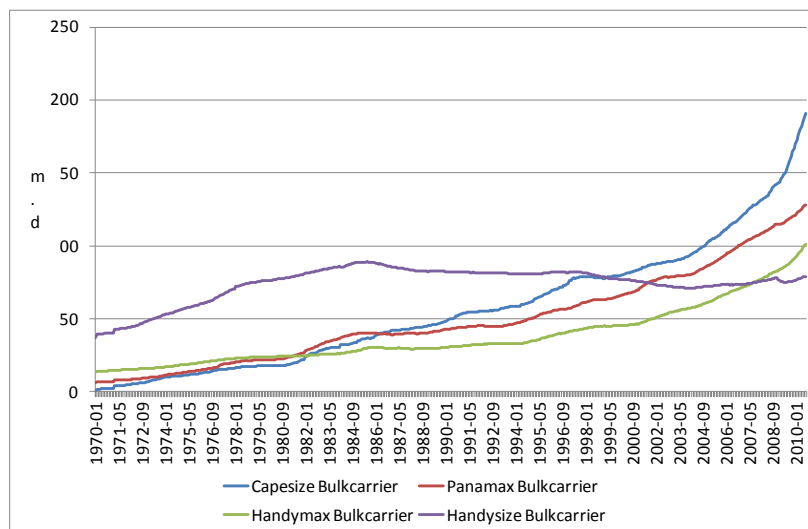


Figure 1, Development of Offered Capacity in the Dry Bulk Freight Market (1970 – 2010)

Source: Data processing by Clarkson Research (Shipping Review Database, 2010)

By examining the data presented in the corresponding Figure, the gradual increase of the offered capacity emerges in all sub-categories, with the exception of the capacity sub-category Handysize. The Handysize ship category, because of its features (smaller transport ability), seems to be more directly affected and led to dissolution from the negative effects of the seaborne trade. In addition, this particular ship category is more easily led to dissolution, if one takes into account its inability to find freight during times of crisis, when compared to the larger carrying capacity ships that have more chances to achieve at least their underemployment, covering at least a part of their operational costs until the recovery of the charter market. In the December of 2008 (when the crisis was at its peak with freight rates scoring a negative record), the total capacity came that came to dissolution amounted to 2,87 million dwt. , from which 0,360 million dwt. accounted to Handymax ships (percentage 12,5% of the total of dismantled ships) and 1,352 million dwt. to Handysize ships (percentage 47% of the total of dismantled ships).

Despite the cancelling of orders aiming to limit the offered capacity and also to activate additional balancing mechanisms (ships' dismantling), imbalance is still present in the market. In the Figure that follows, the offered capacity variation rate is displayed (in dwt.) in relation to the respective variation rate of seaborne dry bulk freight transport, where from 2008 there seems to be a notable increase rate of offered capacity in relation to the respective increase rate of seaborne dry bulk freight transport, leading the overall levels of the charter market into substantial decline.

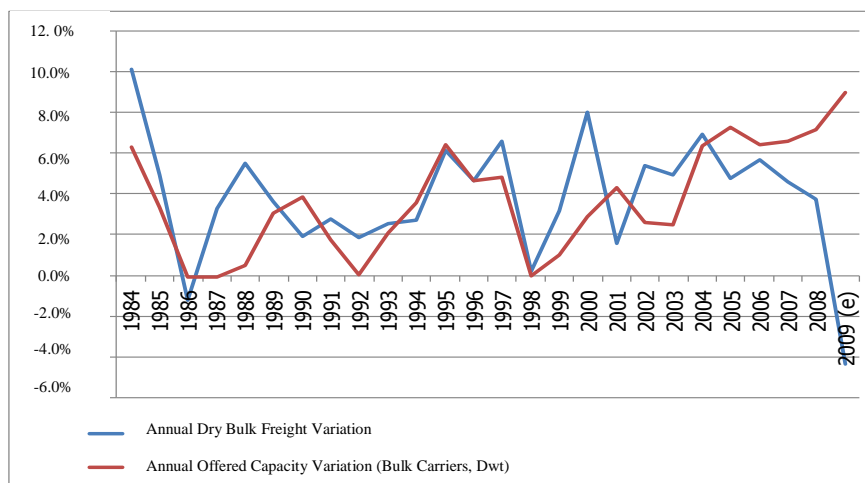


Figure 2 Percentage Variation of Offered Capacity and Seaborne Dry Bulk Freight Trade (1986 – 2009)

Source: Data processing by Clarkson Research (Shipping Review Database, 2010)

The imbalance between supply and demand in the dry bulk freight market is also reflected on the charter market. Freight rates in the dry bulk market exhibit equally strong variability (Figure 3), affecting the formulation of the total income from the operational exploitation of ships in said market, but also the ability or not, to cover both the obligatory operational costs and the required loan installments.

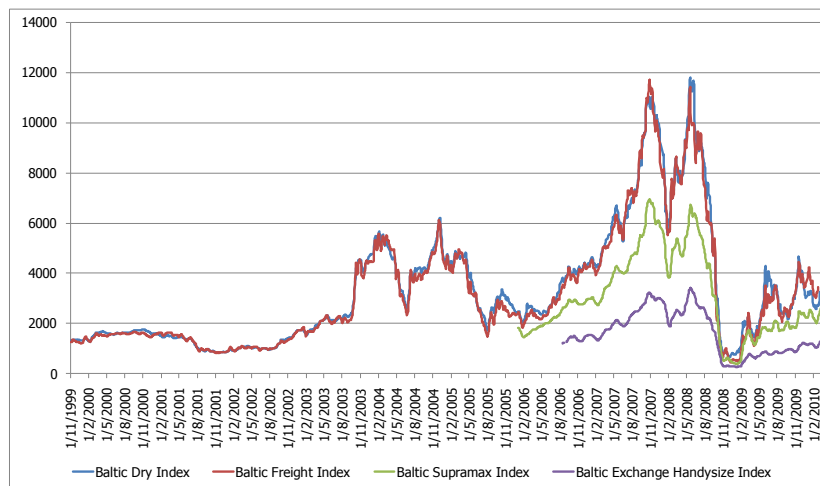


Figure 3 Development of Freight Rate Indices in the Dry Bulk market (Baltic Dry Index¹, Baltic Freight Index², Baltic Supramax Index, Baltic Handysize Index, 1999 - 2010)

Source: Data processing by Clarksons Intelligence Network, 2010

Besides the volatility of the charter market, the ships' values present high variability too (whether newly built or second-hand). To provide an example, it is known that in 2001, the prices of new constructions were estimated to be on an average of \$39 million for Capesize, \$21 million for Panamax and \$19,8 million for Handymax ships. Within a five-year period, in 2006, the new constructions' prices had almost doubled and were estimated to be on an average of \$62,8 million for Capesize, \$36,6 million for Panamax and of \$32,6 million for Handymax ships. The highest prices for newly built dry bulk ships were noted on August 2008 (when the charter market had also noted its highest prices at the same time period, under a periodic survey) with the prices being formed into \$99 million for Capesize, \$55 million for Panamax and into \$48,5 million for Handymax ships. Shortly afterwards, the values of new constructions plummeted (Figure 4) with small fluctuations, reflecting without notable delay the course of the charter market. The prices of second-hand ships followed a similar course, the value of which is declining since the outbreak of the global financial crisis.

¹ The Baltic Dry Index (dry bulk index) is an index that receives daily rates from the Baltic Exchange Stockmarket which is based in London. This particular index offers evaluation for the seaborne transport freight rates, of the most important raw materials. For the computation of this index, 26 sea routes (ship routes) are assessed together and they are measured by taking into account time schedules and distances. This index includes ships, Handymax, Panamax, and Capesize carrying dry bulk, which transfer cargoes like coal, iron ore, grain etc.

² The Baltic Freight Index (BFI) was created on the 4th of January 1985 for the Baltic Exchange of London (freight rates' 'stockmarket'). This index shows the everyday average of the given freight rates for specific dry bulk markets. In reality, this is a combination that includes voyage and time charters that are valued depending on the importance of every purchase. The composition of this index aims to the better representation of the total and of the response in spot variations.

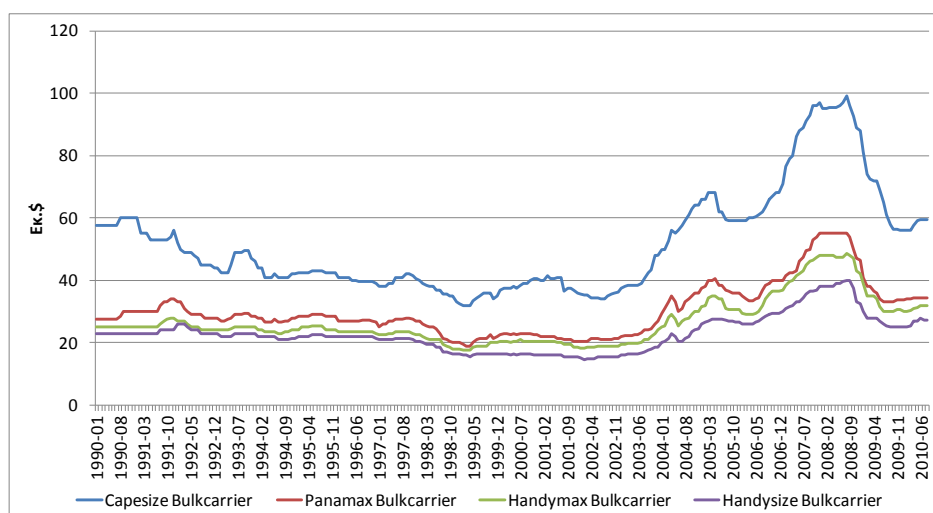


Figure 4, Development of Prices Concerning Newly-Built Dry Bulk Ships (1990-2010)

Source: Data processing by Clarkson Research (Shipping Review Database, 2010)

With the decline of the income of maritime enterprises for granted, after the outbreak of the global financial crisis, the phenomenon of the inability of loan servicing was observed, with the banks being left exposed, because, besides the fact that loans were not repayed, the value of a ship under mortgage is significantly lower than the value of ownership or shipbuilding, as the latter is formed based on the developments of the supply and demand for capacity at a specific moment in time. This fact led the banks to limit the loans that would be granted for the maritime industry, a trend that was reinforced by the application of the Basel Accord III.

4. THE REPERCUSSIONS OF THE FINANCIAL CRISIS IN BORROWING AND IN THE BANKS' OPERATIONAL FRAMEWORK

Due to the global financial crisis, fluctuations in freight rates and yields in the shipping markets naturally lead to a constant evaluation and re-evaluation of the investment and disinvestment in the industry, hence shifting liquidity, which in turn leads to a credit crunch. Today, shipping is in a slight credit crunch due to capital flight, in conjunction with the over-supply of available capacity, low yields and low yield expectations; as a result, investors and credit institutions show little interest in the shipping sector as they see limited potential of maximizing their yields to the benefit of their investors and shareholders.

This is also reflected in the size of shipping financing which has been constantly dropping over the last years (Figure 5) (Antoniou H. 2010), while a significant portion relates to re-financing of existing loans. In 2009, when the drop in the freight market caused a significant drop in the cash flows of maritime enterprises, the re-financing of existing syndicated loans reached 43.55% of total shipping financing.

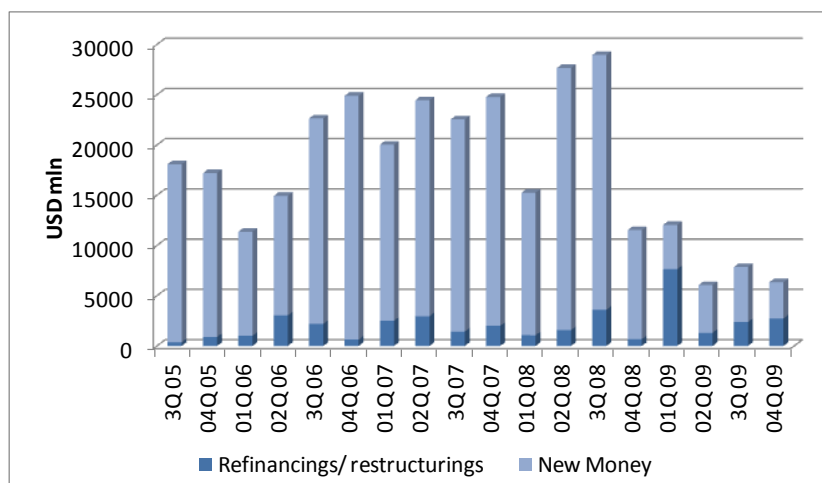


Figure 5 Volume of shipping financing (Syndicated loans, 2005 – 2009)

Shipping Forum 2010, 23 February 2010

Source: Harris Antoniou, The New Normal in Shipping Finance, Capital Link Greek

Furthermore, the prevailing uncertainty and ever-changing physical and financial markets have forced investors to defend against continuous risks through a commonly acceptable framework of rules governing primarily the operations of banking institutions. In this context, the Basel Accord was drafted (by the Basel Committee) laying down common rules with a view to ensuring the capital adequacy of banking institutions. The need for capital adequacy has led to the enforcement of relevant rules originally in 1988, and their subsequent amendment under the Basel Accord ("Basel I"). Considering, however, that this framework was incapable of providing the necessary level of security, it has lead inevitably to "Basel II", a set of even stricter rules on capital adequacy. Understanding the need for a readjustment of the rules of Basel II, the international regulators have introduced an amendment thereto (known as Basel III) which forces banking institutions to retain a larger amount of equity in order to deal with possible financial crises, whether due to poor customer selection (poor structuring and internal evaluation systems) or poor selection of financial products (e.g. government bonds of states facing the possibility of a bankruptcy). Under the new requirements for a customized approach of financing components and policies (Basel II and III), every banking institution should evaluate both credit and operating-risk parameters and market risk parameters.

The set of upgraded rules introduced under the Basel Accord has raised concern in the shipping sector, as the Accord is intended to minimize recent risks whether relating to inefficient portfolios or otherwise, or even limit its exposure to particular sectors (such as the shipping and airline industries) and achieve a much improved capital adequacy in both qualitative and quantitative terms.

Furthermore, shipping portfolios (just like airline portfolios) are currently among the least attractive ones in the international financial system, owing to a number of reasons. One of the most important reasons relates to the term of financing duration. In the shipping industry the term of financing duration ranges on average from five to ten years in respect of banking institutions granting facilities up to \$30,000,000 - 40,000,000. It is noted that in the case of syndicated loans, the amount of the facility may reach \$500 million. This fact places the shipping industry at the centre of the Net Stable Funding Ratio (NSFR) in Basel III, which is one of the two liquidity indicators adopted under the Basel Accord that sets a minimum amount of standard financing in respect of each bank, based on the bank's

yearly liquidity over assets. In conclusion, if a bank offers long-term loan facilities to its customers it must either ensure on a directly proportional long-term basis an increase in retail deposits or issue debt securities, which is currently considered to be extremely difficult. According to the information supplied by Dealogic, the above deficit has dropped from 1.3 trillion Dollars in 2009 to 906 billion Dollars in 2011.

Thus, for many banks which have been engaging in shipping financing until now this means higher costs or even higher risk or increased capital obligations, which makes them more reserved towards shipping financing. Moreover, capital pricing and the cost of capital in shipping financing are also expected to have a negative impact, as the costs arising from the customized monitoring of borrowers will be somehow compensated.

5. CONCLUSIONS

According to the longitudinal analysis of the dry bulk freight market one is able to perceive the diversity of the factors that interact in order to each time formulate the freight value rates and the fixed assets. The most crucial factors from those interact either directly or indirectly, affecting the decisions of financial institutions, in order to prompt them to finance them or to set financing parameters (leverage ratio, loan duration, repayment conditions etc.). Said reasons render the shipping market to be perhaps the most challenging, speaking from a predictability and modeling point of view, when it comes to a having single model that could reflect the total risk with credibility.

The fluctuations of freight rates and yields in the dry bulk freight shipping market, led to a continuous specification and re-specification of the investment and disinvestment from the sector, with the consequence of the transferring of liquidity from one purchase to another, or more often from one market category to others, causing as a result credit crunch to branches that happen to be, at the same time, affected from constant depression. Today, shipping is in a relative credit crunch situation from the capital flight, by cause of a combination of oversupply, available capacity, low yields and equally low expectations for future yield, and as a result it will not draw the attention of investors and of financial institutions, which in their turn aim for the maximization of yields for the benefit of their investors and shareholders.

Moreover, based on the current demand for a personalized approach of data and of governmental financing (Basel II and III), every financial banking institution should take into account the parameters that set the credit risk, the operational risk and also the ones that set the market risk.

The increased cost provision of the loan agreement, that remains inactive until this day, is expected to concern the signatory parties and will develop into a legal interest field. The most direct issue which both borrowers and creditors will have to deal with in the near future (which of course, they already do), is about the understanding of the conditions under which the signatory parties will have to continue their operations. Of course, the possibility of the withdrawal of banks from the field is still open (up to now important portfolios have been withdrawn), for the benefit of Asian governmental economies that offer an alternative approach in the worldwide shipping industry. If the banking sector does not wish to lose the shipping sector, despite the fact that the latter proved to be damaging for banking institutions in many periods, however yielded significant capital gains in other times, then, there should be found a commonly accepted framework of understanding and consultation for the content, the form, and the elements that contribute to the calculation of the credit and market risk in the shipping industry.

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